



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/626,234	07/26/2000	Keishi Nishikubo	49762(868)	7950

21874 7590 08/21/2003

EDWARDS & ANGELL, LLP
P.O. BOX 9169
BOSTON, MA 02209

EXAMINER

NGUYEN, JIMMY H

ART UNIT	PAPER NUMBER
----------	--------------

2673

DATE MAILED: 08/21/2003

//

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/626,234

Applicant(s)

NISHIKUBO ET AL.

Examiner

Jimmy H. Nguyen

Art Unit

2673

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 June 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 9.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

1. This Office Action is made in response to applicant's papers filed on 07/26/2000. Claims 1-8 are currently pending in the application. An action follows below:

2. This Office Action is made in response to applicant's amendment filed on 06/13/2003 (entered into the file wrapper as Paper No. 10). Claims 1-11 are currently pending in the application. An action follows below:

Drawings

3. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the features, "positive-side (high level) voltage resistance division ratios and negative-side (low level) voltage resistance division ratios are set so as to be asymmetrical with one another depending on level shift characteristics" recited in claim 1, and "resistance division ratios are optimized depending on gray scale characteristics" recited in claim 2, must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Objections

4. Claim 3 is objected to because of the following informalities: line 8, "a" should be changed to --said-- because of its sufficient antecedent basis. Appropriate correction is required.

5. Claim 4 is objected to because of the following informalities: line 6, "a" should be changed to --said-- because of its sufficient antecedent basis. Appropriate correction is required.

Art Unit: 2673

6. Claim 5 is objected to because of the following informalities: lines 5 and 6, “which” should be changed to --said-- because of its sufficient antecedent basis. Appropriate correction is required.

7. Claim 6 is objected to because of the following informalities: lines 5 and 6, “which” should be changed to --said-- because of its sufficient antecedent basis. Appropriate correction is required.

8. Claim 10 is objected to because of the following informalities: line 4, “which” should be changed to --said-- because of its sufficient antecedent basis. Appropriate correction is required.

9. Claim 11 is objected to because of the following informalities: lines 2 and 4, “which” should be changed to --said-- because of its sufficient antecedent basis. Appropriate correction is required.

Claim Rejections - 35 USC § 112

10. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

11. Claims 1-11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

As per claims above, since the disclosure of the pending application, when filed, does not provide expressly the **definition** of the claimed features, “positive-side (high level) voltage resistance division ratios” and “negative-side (low level) voltage resistance division ratios” of independent claim 1, and “resistance division ratios” of independent claims 2 and 9, it is not clear what the Applicants mean positive-side (high level) voltage resistance division ratios (i.e.,

Art Unit: 2673

referring to fig. 3, one of the positive-side voltage resistance division ratios is equal to $(RH1/RH1+RH2+ \dots +RHN-1)$, $(VH1/RH1)$ or another), negative-side (low level) voltage resistance division ratios (i.e., referring to fig. 3, one of the negative-side voltage resistance division ratios is equal to $(RL1/RL1+RL2+ \dots +RLN-1+Rm)$, $(VL1/RL1)$ or another) and resistance division ratios (i.e., referring to fig. 3, one of the resistance division ratios is equal to $(RH1/RH1+RH2+ \dots +RHN-1)$, $(RL1/RL1+RL2+ \dots +RLN-1+Rm)$, or $(RH1/RH1+RH2+ \dots +RHN-1+RL1+RL2+ \dots +RLN-1+Rm)$)).

12. Claims 3, 4, 7, 8 and 10 recite the limitation "The source line driver" in line 3 of claims 3 and 4, and line 1 of claim 10. There is insufficient antecedent basis for this limitation in the claims. It is noted Applicants that the source line driver is different from the source driver, i.e., as illustrated in fig. 2 or 3, the source line driver (8) comprising a grayscale reference voltage generation circuit (9) and a source driver (2). Further, see the original claims 3 and 4 as references.

13. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

14. Claims 1-11 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Regarding to claims 1, 3, 5 and 7, the disclosure, when filed, does not contain sufficient information regarding to the claimed feature, "positive-side (high level) voltage resistance

Art Unit: 2673

division ratios and negative-side (low level) voltage resistance division ratios are set so as to be asymmetrical with one another depending on level shift characteristics respectively associated with each said target gray scale level", of independent claim 1 as to enable one skilled in the pertinent art to make and use the claimed invention. The disclosure, page 27 line 7 through page 28, line 13, discloses that the output voltage of the source driver at each gray scale level must be set so as to be vertically symmetrical (specifically at page 27, lines 13-14) and the resistance values of the series resistors for generating the positive-side gray scale voltages are set vertically asymmetrical with the resistance values of the series resistors for generating the negative-side gray scale voltages in consideration of the correction of the level shift characteristic (specifically at page 28, lines 8-13). However, the disclosure, when filed, does not provide expressly the **definition** of "positive-side (high level) voltage resistance division ratios" and "negative-side (low level) voltage resistance division ratios" (see the rejection under 35 USC 112, second paragraph above), so that one skilled in the pertinent art enables to make and use the claimed invention, i.e., to set the positive-side (high level) voltage resistance division ratios and negative-side (low level) voltage resistance division ratios to be asymmetrical with one another depending on level shift characteristics, as recited in independent claim 1.

Regarding to claims 2, 4, 6 and 8, the disclosure, when filed, does not contain sufficient information regarding to the claimed feature, "resistance division ratios of the resistance-type voltage division circuit are optimized depending on gray scale characteristics", of independent claim 2 as to enable one skilled in the pertinent art to make and use the claimed invention. The disclosure, page 27 line 21 through page 28, line 13 and page 29, lines 10-12, discloses that the resistance values of the series resistors are set in consideration of the correction of the level shift

Art Unit: 2673

characteristic (specifically at page 28, lines 8-13) and the level shift depends on the gray scale voltages (specifically at page 29, lines 10-12). However, the disclosure, when filed, does not provide expressly the **definition** of “resistance division ratios” (see the rejection under 35 USC 112, second paragraph above), so that one skilled in the pertinent art enables to make and use the claimed invention, i.e., to set the resistance division ratios to conform to the target gray scale display characteristics associated with the target gray scale levels, as recited in independent claim 2.

Regarding to claims 9-11, the disclosure, when filed, does not contain sufficient information regarding to the claimed feature, “resistance division ratios of the resistance-type voltage division circuit are set to conform to the target level shift characteristics and γ characteristics of the target gray scale levels”, of independent claim 9 so as to enable one skilled in the pertinent art to make and use the claimed invention. The disclosure, page 27 line 21 through page 28, line 13 and page 29, lines 10-12, discloses that the resistance values of the series resistors are set in consideration of the correction of the level shift characteristic (specifically at page 28, lines 8-13) and the level shift depends on the gray scale voltages (specifically at page 29, lines 10-12). However, the disclosure, when filed, does not provide expressly the **definition** of “resistance division ratios” (see the rejection under 35 USC 112, second paragraph above), so that one skilled in the pertinent art enables to make and use the claimed invention, i.e., to set the resistance division ratios to conform to the target level shift characteristics and γ characteristics of the target gray scale levels, as recited in independent claim 9.

Art Unit: 2673

15. Because of the 112 rejections above, the following art rejections are based as best understood by examiner.

Claim Rejections - 35 USC § 103

16. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

17. Claims 1-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kamei et al. (USPN: 5,640,174, cited in IDS filed on 11/14/2001), hereinafter Kamei, and further in view of Nitta et al (USPN: 6,275,207 B1), hereinafter Nitta.

As per claims above, as noting in fig. 1, Kamei discloses an active matrix liquid crystal display device comprising a plurality of pixels disposed in a matrix (col. 1, line 63), a plurality of data signal lines (drain signal lines, col. 3, lines 38-39), a plurality of scanning signal lines (scanning lines, col. 4, line 39), switching devices (TFTs, col. 1, lines 19-20), and a source line driver (fig. 1), which comprises a grayscale reference voltage generation circuit (a circuit including elements (4-8)) and a source driver (a driver including a voltage dividing resistor circuit (col. 2, line 64), a buffer (9) and drain drivers (10, 11)) including a plurality of input terminals, one of said input terminals supplied with a positive-side highest level reference voltage (a positive maximum voltage (+V1), col. 2, lines 57-59) and to the other of said input terminals supplied with a negative-side highest level reference voltage (a negative maximum voltage (-V1), col. 2, lines 59-61), for generating positive-side gray scale voltages (V1-Vn) and negative-side gray scale voltages (V'1-V'n) based on the positive-side highest level reference

Art Unit: 2673

voltage and the negative-side highest level reference voltage (col. 3, lines 6-11). Furthermore, as noting in figs. 6a-6b and at col. 3, lines 6-19, col. 4, line 49 through col. 5, line 5, Kamei further teaches that the positive-side voltage division ratios and negative-side voltage division ratios are set to be asymmetrical with one another depending on level shift characteristics and target gray scale display characteristics respectively associated with each target gray scale level. Accordingly, the difference between the invention defined in claims above and the Kamei reference is that Kamei discloses the voltage division ratios while the claimed invention recites the resistance division ratios. However, Nitta discloses expressly that changing the voltage division ratio is obtained by changing the resistance dividing ratio (col. 6, lines 9-67, specifically at lines 9-15 and lines 65-67). It would have been obvious to a person of ordinary skill in the art at the time of the invention was made to utilize Nitta's teaching, i.e., changing the resistance division ratio instead of changing the voltage division ratio, in the display device of Kamei because this would improve the display brightness and the variation characteristics of color displayed images, which are matched with a user's taste, as taught by Nitta (col. 1, lines 49-58 and col. 9, lines 46-51).

Response to Arguments

18. Applicants' arguments filed with respect to the objection to the drawings and the rejections under 35 USC 112, first and second paragraph, page 10-13, have been fully considered but they are not persuasive because as follows: (1) the disclosure as indicated by Applicants (see page 12, second paragraph), specifically fig. 4 which only shows the resistance values versus the gray scale voltages, does not teach expressly the **definition** of the claimed features, "**positive-side (high level) voltage resistance division ratios**" and "**negative-side (low level) voltage resistance division ratios**" of independent claim 1, and "**resistance division ratios**" of

Art Unit: 2673

independent claims 2 and 9, and (2) as mentioned in the rejections under 35 USC 112, first and second paragraphs above, the disclosure, when filed, does not provide expressly the **definition** of the claimed features, “positive-side (high level) voltage resistance division ratios” and “negative-side (low level) voltage resistance division ratios” of independent claim 1, and “resistance division ratios” of independent claims 2 and 9, so as to enable one skilled in the pertinent art to understand what the applicants mean the underlined features above, and to make and use the claimed invention.

19. With respect to the art rejections, in response to Applicants’ argument filed “Accordingly, ... Kamei et al type resistance-type voltage division circuit, that is **external** of the source driver rather than being an **internal** part thereof”, page 14, last paragraph, examiner clearly discussed in the detailed rejection above that Kamei clearly teaches the source driver comprising a resistance-type voltage division circuit (see the rejection above).

Conclusion

20. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

Art Unit: 2673

however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

21. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jimmy H. Nguyen whose telephone number is (703) 306-5422.

The examiner can normally be reached on Monday - Thursday, 8:00 a.m. - 5:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bipin Shalwala can be reached at (703) 305-4938.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231


or faxed to:

(703) 872-9314 (for Technology Center 2600 only)

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377.

JHN
August 17, 2003



BIPIN SHALWALA
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600